Amendments to the Claims

This Listing of Claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A process for determining whether to inspect an aluminum electrolysis cell for a crust hole ~~controlling operations in a cell for producing aluminum by electrolysis of alumina wherein said cell comprises a chamber containing a molten electrolyte comprising cryolite and alumina, said electrolyte being at least partially covered by a solid crust, said~~ the process comprising:

(a) operating an aluminum electrolysis cell having hooding connected therewith~~establishing a standard rate of addition of aluminum fluoride to the electrolyte~~;

(b) confining fumes evolved from the aluminum electrolysis cell via the hooding;

(c) moving a crane adjacent to the aluminum electrolysis cell, the crane having an infrared sensor mounted thereto;

(d~~b~~) sensing infrared radiation on the outer surface of the ~~chamber~~ hooding with ~~an~~ the infrared sensor to obtain a thermal image of the hooding~~determine an actual temperature~~;

(e) sending the thermal image to a data processor;

(f) extrapolating an actual temperature of the hooding from the thermal image of the hooding via the data processor; and

~~(c) comparing said actual temperature to a target temperature; and~~

(h~~d~~) when the actual temperature varies from ~~said~~ a target hooding temperature by more than a preselected limit, inspecting the crust of the aluminum electrolysis cell for a crust hole.~~accomplishing at least one of the following:~~

~~(i) varying an actual rate of addition of aluminum fluoride to the electrolyte in accordance with one of the following steps:~~

~~(1) increasing the actual rate of aluminum fluoride addition above the standard rate when the actual temperature is greater than the target temperature; and~~

~~(2) reducing the actual rate of aluminum fluoride addition below the standard rate when the actual temperature is less than the target temperature; and~~

~~(ii) inspecting the crust for crust holes; and~~

~~repairing any of said crust holes, wherein said repairing step comprises covering said crust holes with solid particles.~~

Claims 2-20. (Cancelled)

21. (New) The process of Claim 1, wherein the sending the thermal image step comprises transmitting the thermal image to a hand-held computer.

22. (New) The process of Claim 21, wherein the transmitting the thermal image step comprises a wireless transmission.

23. (New) The process of Claim 1, further comprising:

estimating the open area in the crust of the cell via the thermal image.

24. (New) The process of Claim 23, further comprising:

predicting the daily amount of AlF_3 addition for the aluminum electrolysis cell based on the open area in the crust.

25. (New) The process of Claim 1, further comprising:

completing steps (a) - (h) for each of a plurality of aluminum electrolysis cells.

26. (New) A system for determining whether to inspect an aluminum electrolysis cell for a crust hole, the system comprising:

an aluminum electrolysis cell for producing aluminum metal;

hooding for confining fumes evolved from the aluminum electrolysis cell;

a crane operable to travel adjacent the aluminum electrolysis cell;

an infrared sensor mounted to the crane, wherein the infrared sensor scans the hooding to obtain a thermal image of the hooding; and

a data processor for extrapolating the actual temperature of the hooding based on the thermal image of the hood and for comparing the actual temperature to a target hood

temperature, wherein the infrared sensor transmits the thermal image to the data processor, and wherein when the actual temperature of the hooding varies from the target temperature an indication is provided to inspect the crust of the aluminum electrolysis cell for a crust hole.

27. (New) The system of Claim 26, wherein the data processor comprises a hand-held computer.

28. (New) The system of Claim 27, wherein the hand-held computer is a personal digital assistant.

29. (New) The system of Claim 26, wherein the infrared sensor is operable to transmit thermal image to the data processor via a wireless transmission.